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Wildland Fire in Communities



United States Department of Agriculture
Forest Service

Editor's note: This issue of *Fire Management Notes* continues the focus on wildland fire prevention begun in vol. 57, no. 3, and, in particular, discusses prevention at the wildland-urban interface or intermix, where forests and grasslands meet or intermix with urban development. Special thanks go to Billy J. Terry, national fire prevention officer for the USDA Forest Service, for his help and advice throughout the production of these two issues.

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On the Cover:



The Miller's Reach Fire, a 1996 wildland-urban interface fire in Big Lake, AK, bypassed this log home because it is situated next to a 300-foot- (91-m-) wide runway, thus has plenty of "defensible space" to reduce fire risk. Photo: Alaska Department of Natural Resources, Division of Forestry, Anchorage, AK, 1996.

Firefighter and public safety is our first priority.

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MANAGING FIRE RISK TO PEOPLE, STRUCTURES, AND THE ENVIRONMENT*



Mary Jo Lavin

I first experienced the true impact of a wildland-urban interface (W-UI) fire in 1987 when the Hangman Hills fire destroyed 24 homes in a subdivision near Spokane, WA. I did not know any of the individual families who lost everything within a few short minutes. As I walked through the still-smoldering ashes of what had been homes, gardens, and places where children had played the day before, I was deeply moved. Since Hangman Hills, my personal symbol of the W-UI remains the same as a scene I saw that day: parallel chains hanging from a twisted frame, the wooden seat of a child's swing burned totally away.

Although the W-UI fire problem has recently received increased national attention, the problem is not new. Since before the 20th century, major residential losses have occurred across the Nation. Now the need is urgent to recognize that fire risk **can** be managed, and it **must** be managed beginning with those of us here today.

Residents who live in what we call the wildland-urban interface (W-UI) must constantly be aware of the threat of catastrophic fire spreading from forested or wooded areas to their nearby homes. Those

We are each responsible for doing “what we **can**, what we **must**, and what we **will**” to address the issues of W-UI fire management.

of us in resource protection worry about “mirror” events—when humans are careless and cause catastrophic fires that spread from wooden houses to wooded habitats.

Whether we are representatives of the insurance industry, natural resource management agencies, homeowners, or some other entity, we must consider how **together** we **can**, we **must**, and we **will** manage the risk of fire to people, structures, and the environment.

Fire Risk Can Be Managed

Yes, the risk of fire **can** be managed. It can be reduced by focused effort of community leaders and residents. Some of the best examples of the successful reduction of the risk of wildland fire to interface communities have been accomplished by the communities themselves, often in concert with a cooperating government agency. For example, Shenandoah County, VA, has an interagency partnership to protect forest homes that is funded by the USDA Forest Service and the Virginia Department of Forestry. Communities at risk are rated and mapped. Educational programs help residents to understand how they can make their property more “firewise.” The best news is that residents follow the suggestions and actually make their neighborhood safer.



The insurance industry can provide incentives for making properties safer. Montana homeowners have reduced risks from wildland fire around their property by thinning and removing fuels such as brush and dry leaves. Photo: Steve Arno, USDA Forest Service, Rocky Mountain Research Station, Missoula, MT.

Dr. Mary Jo Lavin is the national director of Fire and Aviation Management for the USDA Forest Service, Washington, DC.

*Dr. Lavin's article is taken, in part, from a presentation she made to the Third Annual Congress on Natural Hazard Loss Reduction in Irving, TX, in June 1996.

The Rockies provide another good example of managing fire risk. Boulder County, CO—along the Front Range of the Rocky Mountains—has implemented a similar program. It is called the Wildfire Hazard Identification and Mitigation System. This effort includes county land-use planning and coordinated emergency-response systems.

Fire Risk Must Be Managed

The high costs in human life and property—as well as in natural resources—emphasize the urgency of managing fire risk in the interface area. The toll in human life and property continues to mount. For example, in 1983 in South Australia, 2,528 homes were destroyed and 77 people died. This international example is paralleled by the 1990 loss of 200 homes in Michigan. Within a year after that incident, in California's Oakland Hills, fire destroyed over 2,500 residences in less than 12 hours. More recently, 774 structures throughout America were lost to the 1996 wildland fires.

Because we know that a severe W-UI fire can destroy whole residential neighborhoods faster than the response time of the best trained and best equipped fire services, we know that we **must** manage fire risks.

Who Can Manage Fire Risk

Managing fire risk in the W-UI is a shared responsibility. The most important component of an effective W-UI strategy is the landowner and/or resident. The individual's efforts, however, must be supported by the experts in land management planning from local and State government agencies as well



According to Dr. Lavin, "Homeowners **must** take primary responsibility for the survival of their homes from fire." This home is not firewise; it has hazardous fuels around it including lumber adjacent to the house. Photo: USDA Forest Service, Rocky Mountain Research Station, Missoula, MT.

as their counterparts in Federal land management and the Federal Emergency Management Agency. The involvement of insurance companies is an often overlooked, but critical, element.

An example of the positive effect resulting from the partnership of insurance and government is the "Wildland-Urban Analysis Rating Plan." With sponsorship from the State Farm Fire and Casualty Company, the Insurance Services Office (ISO) is conducting a program in Orange County, CA, that uses National Fire Protection Agency Standard 299 (Protection of Life and Property from Wildfire) for its criteria.

This program calls for the collection of information about specific characteristics of a property and develops an overall grade for the risk. Characteristics include fuel type, infrastructure, public resources, and building materials. The pilot program is expected to be completed in the near future.

Federal assistance is a significant support for the individual resident or total community addressing

W-UI issues. Possible assistance from Federal wildland protection agencies includes:

- Identification of high-hazard areas;
- Fuel modification and reduction;
- Prevention of unwanted fires;
- Firefighter training, and
- Public awareness and education.

Particular to the Forest Service is the expansion and promotion of cooperative fire protection programs nationally and locally, including:

- The Federal Excess Personal Property (FEPP) program that loaned a total of \$335 million of excess military property to State and local governments for firefighting purposes during 1995 and 1996; and
- Cost-share grants to State and volunteer fire departments for firefighting purposes.

Who Must Manage Fire Risk

W-UI residential fire safety can be improved, but only when individual residents take action will

Continued on page 6

the risk of wildland fire be reduced. Homeowners **must** take primary responsibility for the survival of their homes from fire.

It is not just good fortune that allows some homes to escape wildland fires while others—such as those in the Hangman Fire of 1987—are burned to the ground. More often, it is homeowner “choice” that can ward off misfortune. We have seen again and again that if interface homeowners choose to take an active part in managing fire risk, they increase the possibility of their properties being spared from fire’s destructive forces.

Federal, State, and local fire agencies are realizing that without homeowner involvement, little can be done to reverse the W-UI fire loss trend. These fire agencies know they must be a community partner and provide information about fire risks in the W-UI. In addition to providing fire suppression, they must coordinate firewise programs and assist homeowners in meeting firewise requirements.

The W-UI is a political minefield. Fires do not respect jurisdictional boundaries but spread quickly across voting districts. Media interest is high and prime-time coverage for local and national elected officials is easily available. W-UI fire losses are not tolerated in a public environment that challenges in volatility the actual fire conditions in the natural environment.

The cost of fighting fires in the W-UI is increasing at an alarming rate. Although fire sizes have remained fairly static, the overall cost of firefighting is increasing every year. It has been estimated that in 1994, \$250 to \$300 million of Fed-

FIRE 21 INCLUDES ISSUES OF W-UI FIRE MANAGEMENT

One of the many goals of FIRE 21—which reflects the USDA Forest Service’s commitment to the safe and prudent use of wildland fire—is to “integrate wildland fire management concerns and the role of fire into all agency resource management programs, where appropriate” (see *Fire Management Notes*, volume 56, number 3).

To meet the future challenges of FIRE 21, the Forest Service has developed a new *Forest Service Manual (FSM)* directive for the wildland-urban interface (W-UI). This directive defines the areas where the agency has responsi-

bilities and clarifies the role of Fire and Aviation Management.

In particular, the directive delineates Forest Service responsibilities with State, tribal, and other partners, including providing “public education of risks, hazards, responsibilities, and action to minimize loss in the wildland-urban interface” and clarifies the agency’s fiscal and legal authorities when exchanging fire protection services with other agencies.

The directive will be reviewed after a 1-year period to ensure that it clearly defines the agency’s role.

eral wildland fire suppression dollars were spent in protecting the W-UI. It is probable that in 1996, Federal, State, and local governments may have spent over \$1 billion in suppression costs.

Political attention and concern must translate into action. That action means developing local codes and standards for firewise building practices, promoting prudent land development, and supporting adequate funding for firefighting agencies.

Who Will Manage Fire Risk

The individual homeowner, government agencies, and the insurance industry **must** work together. They must join forces, expertise, and effort to address the almost overwhelming challenges of the W-UI. Federal, State, and local fire agencies need the assistance of the insurance industry in making W-UI

homeowners aware of their fire safety responsibilities. Furthermore, the insurance industry can provide these homeowners with incentives for building with firewise materials and for reducing risks around their properties.

The insurance industry can include hazards and risks associated with the W-UI into the fire protection grading system of the ISO. The insurance industry is challenged with contributing what it has learned from other catastrophic threats to addressing—and reducing—severe wildland-urban home losses.

No one entity will be successful in addressing the issues of W-UI fire management. But we are each responsible—the individual, the agency, and the industry—for doing what we **can**, what we **must**, and what we **will** to end the repeated needless waste that is the result of W-UI fires. ■

1996 ALASKAN WILDLAND-URBAN INTERFACE FIRE—A CATALYST FOR PUBLIC INVOLVEMENT



Lee Clark and Kathryn D. Hardy

Most Alaskans know about the destructive losses from wildland fires burning in the “lower 48” wildland-urban interface (W-UI) areas. Dramatic media coverage of raging wildfires destroying homes in such places as Malibu, CA, or Long Island, NY, have captured the attention of all American citizens. Even though in 1990, a large wildland fire threatened Tok, AK, there was no significant property loss. Alaskans in general felt that fires burned communities elsewhere but not in their backyard. That all started to change after the disastrous Miller’s Reach Fire in June of 1996. Now Alaskans are thinking about and discussing the hazards and destructive power of wildfire.

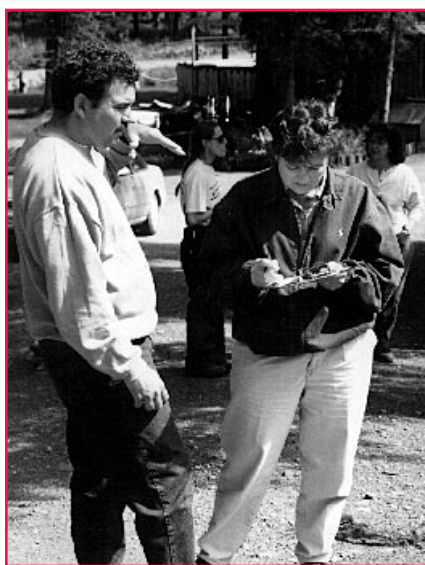
The Miller’s Reach Fire, a wind-driven, W-UI fire, covered more than 36,000 acres (14,600 ha) in less than 3 days. It destroyed 344 structures and threatened another 952 homes and other buildings in and adjacent to the communities of Houston and Big Lake, AK. Even though Anchorage was separated from the fire by a large body of water, residents were made uneasy when they saw columns of smoke across the water and also when smoke poured into the city.

Lee Clark is the district fire management officer for the USDA Forest Service, Clearwater National Forest, Powell Ranger District, Powell, ID, and Kathy Hardy is the assistant district ranger, USDA Forest Service, White River National Forest, Holy Cross Ranger District, Minturn, CO.

Interagency teams helped make fire protection a way of life for Alaskans.

Fire Group Charters Protection Team

While the fire was still burning, the interagency Alaska Wildland Fire Coordinating Group (AWFCG), composed of Federal, State, and native representatives, decided this event was an opportunity to educate the public about how to protect life and property from future wildland fires. They



Mike Denney (left), assistant fire warden for the Mica District, Idaho Department of Lands, and Bev Stout, fire prevention coordinator from the Indiana Department of Natural Resources, Division of Forestry, visited with homeowners in the Kenai Peninsula in Alaska to conduct home hazard assessment ratings. Photo: Alaska Department of Natural Resources, Division of Forestry, 1996.

chartered two Alaska interagency Fire Protection Teams to develop broad-based prevention and protection information and to work with communities and individuals to show them how they could better prepare themselves for wildland fire.

The AWFCG not only wanted to help deal with the W-UI problems of the disastrous Miller’s Reach Fire, they wanted the Fire Protection Teams to meet and share fire protection information with other communities across Alaska.

The AWFCG knew that the Miller’s Reach Fire had caught public attention better than any planned public involvement effort could have done. They wanted to include Fire Protection Team members from different agencies who could bring different viewpoints and possible solutions to Alaska. These team members had to be highly skilled and knowledgeable in working with fire situations, with the media, with local community officials, and with agency personnel. The teams needed technical skills in fire prevention and wildfire suppression, the knowledge of how to deal with those issues on a large-scale basis, and the ability to facilitate community meetings and provide public education. As representative for the AWFCG, Cindy Forrest-Elkins, Alaska Department of Natural Resources, Division of Forestry, helped recruit six individuals from the lower 48 (because

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of the lack of Alaska fire personnel available at the time). Two Fire Protection Teams were developed, each consisting of three members experienced in fire management and prevention education plus an Alaskan liaison to help coordinate and make agency contacts.

The southern team covered the area from Big Lake, Palmer, and Anchorage, down the Kenai Peninsula to Homer. Team members were Mike Denney, assistant fire warden for the Mica District, Idaho Department of Lands; Bev Stout, fire prevention specialist from the Indiana Department of Natural Resources; Judy Behrens, public affairs officer for the Cleveland National Forest; and Jim Evans, retired from the Anchorage Fire Department, who was their Alaskan liaison.

The northern team covered the interior of Alaska from Circle to Fairbanks, Tok to Glenallen. This team included Kathy Hardy, assistant district ranger from the White River National Forest; Lee Clark, district fire management officer from the Clearwater National Forest; T. J. Johannsen, fire education specialist for the Prineville District of the Bureau of Land Management; and Bud Rotroff, fire prevention specialist for the Alaska



A home that survived the Miller's Reach Fire because of landscaping that provided defensible space. Note that the fire killed black spruce behind the property. Photo: Bud Rotroff, Alaska Department of Natural Resources, Division of Forestry, 1996.

Division of Forestry who served as their Alaskan liaison.

Preparation for the Tasks

Teams spent their first few days in Anchorage meeting with members of the AWFCG, which included representatives from the Alaska Department of Natural Resources, Division of Forestry; the USDI's Bureau of Land Management, National Park Service, and Fish and Wildlife Service; and the USDA Forest Service.

The Fire Protection Teams gathered fire protection materials developed in Alaska and, when there were no local examples, utilized other material from the lower 48.

They also prepared travel schedules and an outline of fire protection messages before setting out for 2 weeks of cross-State travel to present the material. (Team members had been ordered as though they were on a fire assignment, with a 21-day maximum commitment before they returned to their regular jobs.) Because much of the existing fire protection material reflected the forests and homes of the Pacific Northwest or California, team members created slide shows and photographic displays that were specific to Alaska ecosystems and communities.

Fire Protection Team Goals

The objective of the Fire Protection Teams was not just fire prevention. Team members also wanted to teach people what they could do to protect their families, homes, and property before wildland fires threatened. They felt that once homeowners realized that they reside in a W-UI and face threats not only from fires starting within their homes or communities but also from wildland fires burning into their developed areas, they would be willing to learn how to minimize risks from wildfire.



All that remains of an Alaskan home that was destroyed by the Miller's Reach Fire in June 1996. Photo: Lee Clark, Clearwater National Forest, Powell Ranger District, Powell, ID, 1996.

Through community meetings and individual home visits, the Fire Protection Teams shared:

- The need for fire protection efforts before fires start,
- The natural and human causes of fire,
- The natural role fire plays in many Alaska ecosystems, and
- The reasons for bans on open fires or fireworks during drought conditions.

The Fire Protection Teams were able to provide messages that could be intimately associated with the human suffering and bravery that were depicted on the nightly news.

During the 2 weeks, the Fire Protection Teams shared fire protection information with interested groups through public meetings and workshops. Various media were asked to help spread the message about these meetings and what homeowners could do to protect themselves from wildfire. The emphasis with homeowners was on what they could do and included:

- Having defensible space (clearing or thinning vegetation from around their homes),
- Ensuring that there is an adequate supply of water for firefighting,
- Designing a plan for escape if a wildfire approaches, and
- Preparing a contingency plan if trapped in their homes by wildfire.

Throughout their travels, the Fire Protection Teams found that many of the people working in the Alaska Division of Forestry, other agencies, and rural fire protection departments already were using local fire protection materials to communicate with their neighbors. Many at the local level welcomed



Helping an Alaskan homeowner learn what she can do to minimize risks from wildfire are interagency Fire Protection Team members (from left) T. J. Johannsen, fire education specialist for the Prineville District of the BLM; the homeowner; Bud Rotroff and Rich Webster, both of whom are fire prevention specialists for the Alaska Division of Forestry; and Kathy Hardy, assistant district ranger from the White River National Forest. Photo: Lee Clark, Clearwater National Forest, Powell Ranger District, Powell, ID, 1996.

the presence of interagency Fire Protection Team members, especially the additional emphasis that they brought to the community about fire protection and preparedness. They appreciated the additional Alaska-specific prevention materials that the teams brought and the sharing of examples of what other communities were doing.

The Fire Protection Teams produced a defensible space training program oriented towards Alaska ecosystems and residents. The teams were able to utilize that information with people in a great number of communities within a very short time period. Four train-the-trainer workshops were held—two in Fairbanks and one each in Anchorage and Glenallen. During these sessions, over 100 local trainers were trained. Target audiences were individuals with fire prevention or protection responsibilities who could go back to their communities and teach community members and local officials about defensible space. Attendees were predominantly local fire department personnel, cooperative extension, and State or Federal

firefighters or prevention personnel.

Summary

An amazing amount of work was accomplished during the short time that the teams were in Alaska. The teams held community meetings and worked with individual families to identify fire risks and opportunities to make improvements. A defensible space course and materials were developed and implemented across the State for multiple agencies and communities. This intensive informational and educational effort was extremely successful, despite the impromptu planning and implementation process. The Fire Protection Teams were a great example of the resources that exist within the fire management community to respond to emergencies in creative ways. In 1996, the teams helped Alaskans understand how to move toward making fire prevention and preparedness a way of life. In 1997, fire protection and education teams were available in the National Interagency Mobilization Guide and could be ordered to help other areas learn how to live with fire. ■

PREVENTION REDUCES LOSSES DURING SOUTHWEST FIRE SIEGE



Judith Downing

During the wildfire siege of 1996, the interagency Southwest Fire Management Board implemented the first-ever multiagency, multistate prevention response to fire severity. This response helped reduce the number of fire starts in the Southwest and prevented large, human-caused, catastrophic fires. (The Southwest Fire Management Board is the coordinating group for Arizona, New Mexico, and west Texas, a geographic area that is divided into 11 interagency dispatch coordination zones.)

Fire conditions had never been more severe in the Southwest than during that year. Fire managers knew that if the numbers of ignitions could be reduced, suppression resources would be freed up, allowing personnel to concentrate their efforts on those fires that did start. Just one measure of the prevention campaign's success is the fact that firefighting resources were never overwhelmed during the 60 days of this interagency response—despite the unprecedented conditions. According to Al Defler, fire director for the USDA Forest Service's Southwest Region, the fire season lasted more than twice as long as normal and included some of the most severe fire behavior ever experienced in the area.

Judith Downing is the fire prevention officer for the USDA Forest Service, Shasta-Trinity National Forests, Redding, CA. She is a Type I information officer on a national Incident Management Team, California Team 3.

"It was critical for firefighter and public safety that we launch an aggressive program to reduce the number of fires caused by people."

—Bob Lee, USDI Bureau of Land Management, New Mexico.

Large catastrophic fires can occur at any time that fire danger is extreme, and by April 15, fire danger in the Southwest had risen to the extreme level. According to the Arizona State Department of Lands (1996), three Federal fires in Arizona had escaped initial attack and become campaign fires (complex wildfires that require days or weeks to control by a large suppression force). Federal firefighting resources from across the United States were deployed throughout the Southwest to provide rapid response to ignitions.

The majority of ignitions that developed into major wildfires by mid-May were caused by people. Two major holidays and the summer recess from schools promised heavy recreational use of the wildlands and even more human-caused fires before monsoon rains could be expected in mid-July. Since fire managers knew that dry lightning storms always precede monsoon rains, they realized some fires would be unavoidable. With firefighting resources already

stretched and the fire season fast approaching in the rest of the West, preventable ignitions—wildfires that people accidentally begin—were unacceptable. "Every fire that did not start was a fire we would not have to fight," said Bob Lee, State fire management officer for the USDI Bureau of Land Management (BLM) in New Mexico. "We were already experiencing severe fire behavior and firefighter entrapments. It was critical for firefighter and public safety that we launch an aggressive program to reduce the number of fires caused by people."

Initial Response

Through the National Interagency Fire Center (NIFC) in Boise, ID, the Southwest Fire Management Board ordered a team of four fire prevention and public affairs specialists. The team was assigned to Santa Fe, NM, to help the board define the problem and develop a plan to coordinate fire prevention actions—many of which were already underway. The initial team members were Bill Clark, Prevention Operations, USDI National Park Service (NPS) at NIFC; Pat Entwistle, public affairs specialist, BLM, NIFC; Pat Tolle, retired public affairs officer, NPS; and Paul Hefner, fire operations officer specialist, Colorado State Office, BLM. The team completed its assessment and recommended that an order for severity funds—dedicated for prevention—be placed through the board. Fire prevention specialists, one for each of the Southwest Fire

Management Board's 11 zones, would work with zone fire management specialists to target specific preventable ignition sources by working across land management and fire agency boundaries to coordinate actions and share information. An area coordinator and a public affairs coordinator were then assigned.

Judith Downing, fire prevention officer for the Shasta-Trinity National Forests, took charge as the first area coordinator. Her task was to recruit a team and create an organization and working philosophy to deal with the urgent fire threat within a unique social, cultural, and interagency environment.

Successful prevention programs could be found throughout the Southwest that were administered by different organizations and agencies. The main jobs of the zone fire prevention specialists were to:

- Help zone boards coordinate prevention activities among various local agencies.
- Identify innovative programs at the field level.
- Reinforce and support those programs with help from the area coordinator's office.
- Communicate those programs to other zone fire prevention specialists.
- Suggest other approaches from other parts of the country that might meet local needs.

To support the zone fire prevention specialist, the area coordinator's office would provide organization and coordination as well as logistical support. In addition, the office would design and produce interagency prevention materials.

Fire prevention specialists were ordered for the zones and to staff key positions, including logistics, finance, and operations—all of these individuals composed the Southwest Fire Prevention Team. (See accompanying box for names of the team members.)

Judy Kissinger, public affairs specialist in the Forest Service's

"The fire season in the Southwest has been one for the record book. It lasted more than twice as long as normal and included some of the most severe fire behavior ever."

*—Al DeFler, USDA Forest Service,
Southwest Region, Albuquerque, NM.*

Washington Office, assumed the role of the first public affairs coordinator. Her task was to develop overall coordination of the interagency fire prevention communication program throughout the Southwest, including the development of prevention materials in both English and Spanish.

Before the 60-day siege was over, Karen Curtiss and Jeannette Hartog also took their turns as the area coordinator; Robert Valen and Mary Karraker similarly served as the public affairs coordinator.

It was apparent immediately that the prevention team faced special conditions that extended far beyond fire severity. For instance, the Southwest area is not only biologically and climatically diverse, but the people of Arizona, New Mexico,

and west Texas come from many different ethnic backgrounds and nationalities. In addition, this forested, high-elevation country attracts huge numbers of tourists from throughout the world, and the area's economy depends heavily on tourism. The team faced the problem of reducing the number of fires without discouraging tourist or resident use of wildland recreation attractions.

The team knew that a centralized program delivering standardized, mass-media prevention messages was not enough by itself to reduce losses from human-caused fires. Messages and delivery would have to be tailored to the cultures, languages, and communication patterns of the many different market segments.

The specialists assigned to each zone had to be able to work independently both with diverse agency cultures and a culturally diverse public. They had to rely on their own judgment, develop and evaluate their own programs, and, to a large degree, find their own resources. At the same time, specialists could not simply focus on their own zone—it was necessary to share ideas and innovations rapidly and frequently across zones. No matter how independent each specialist was, all team members relied on the others for information and advice.

The Strategy

Under these unique conditions, a combination of central control and organization using the Incident Command System (ICS) and independent self-direction was needed, so while the Southwest Fire Prevention Team was organized and managed under the ICS,

Continued on page 12

zone operations were highly decentralized. Zone fire prevention specialists found that this interactive, self-directed style was the most effective. Their jobs included coordinating and supporting the prevention efforts of local, State, and national agencies; they did not direct those activities.

The ICS management structure allowed easy linkage to the fire organization for ordering, logistics, finance, area-wide general planning, and coordination with the Southwest Fire Management Board. Zone specialists contributed ideas and information that established and modified the team goals. Zone operations also depended upon a high degree of communication among specialists to support informal coordination of prevention activities, encourage innovative thinking, and provide interdisciplinary mutual support.

The area and public affairs coordinators and staff monitored the fire prevention specialists to find ways to assist them to serve the needs of Zone Fire Management Boards more effectively. Specialists used a variety of prevention tactics. For example, they worked closely with agency public affairs officers to promote news media coverage on the role of fire in ecosystems and the use of management-prescribed fire. Specialists also used more unusual methods such as the following:

- Organizing local real estate agents to promote wildfire defense preparations and fire safety,
- Enlisting members of the Disabled American Veterans organization to distribute fire safety literature at fire-danger-alert checkpoints along highways,

THE SOUTHWEST FIRE PREVENTION TEAM MEMBERS

A typical assignment for the following members of the Southwest Fire Prevention Team was 21 days, although some individuals worked longer than that and others had pressing assignments elsewhere and couldn't participate that long. Most zone preven-

tion specialists received a 1-day briefing before being sent into the field to help community groups with whatever prevention projects were deemed necessary. Together, the specialists logged 374 field days during the Southwest fire siege of 1996.

Richard Arm	Joe Bellin	Steve Billings
Judy Chetwin	Karen Curtiss	Angela Dinardi
Judith Downing	Randy Eardley	Ben Espinosa
Jeannette Hartog	Gary Jennings	Mary Karraker
Judy Kissinger	Merv Lent	Hallie Locklear
Peter Martin	Dave Merrifield	Terry Murphy
Brenda Nelson	Cathy O'Brien	Roceythia Pollard
Barbara Rebiskie	Rick Reitz	Chuck Robinson
Karla Rocha	Leticia Ruiz	Dave Shaw
Dave Sherwood	Jimmye Turner	Robert Valen
Teresa Wheeler	Nancy Wiggins	

"In May and June, fire starts were greatly reduced because of strong support by Arizona citizens and the news media."

—Arizona State Land Department, Fire Management Division.

- Working with White Sands Missile Base personnel to hand out fire safety literature at road closures and on the base, and
- Using AmeriCorps volunteers to assist with fire prevention education (see Valen 1997).

The Southwest Fire Prevention Team worked closely with the Interagency Fire Prevention and Fire Information Center at the Expanded Dispatch Support Center in Phoenix, AZ. This center, under the direction of Jim Payne and Dave Killebrew, was supported by severity funding and operated from May 5, 1996, to July 10, 1996. As a major hub for the news media in Ari-

zona, their personnel responded to over 1,000 media requests for information on fire restrictions, area closures, and fire prevention stories and messages.

Results

An analysis of fire statistics shows that the special fire prevention and suppression efforts implemented in the Southwest during the 1996 fire severity period reduced both the number of human-caused fires and the number of acres burned. The average daily number of fires declined significantly once media alerts, community efforts, and the prevention team's operations were underway (see fig. 1). From Janu-

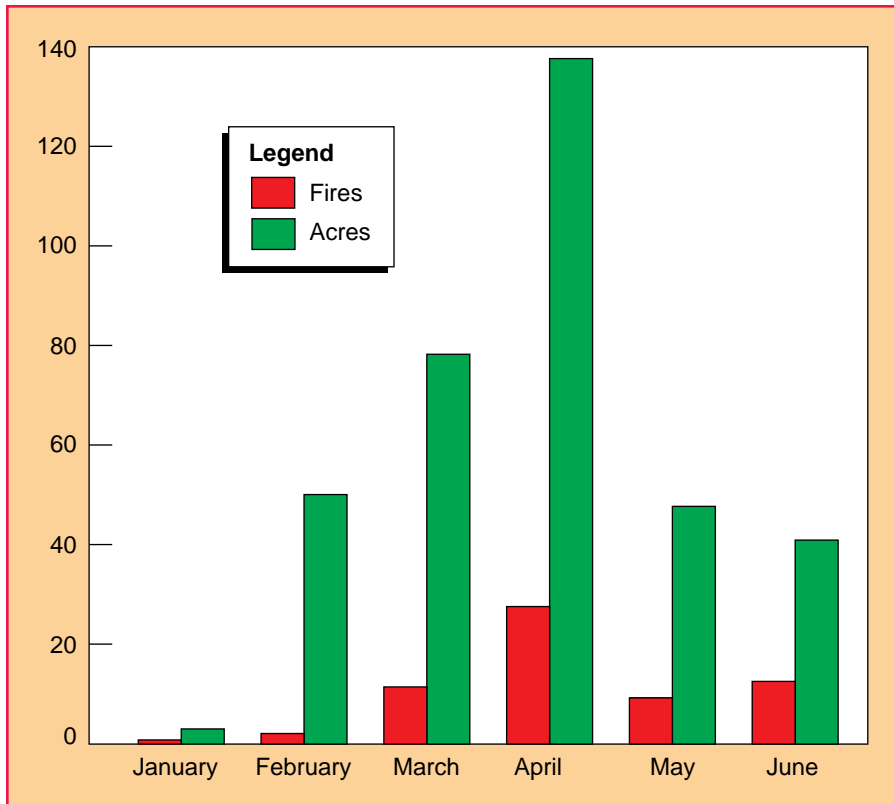


Figure 1—Average daily human-caused fires and average daily acres burned (by month) in Arizona, New Mexico, and west Texas in the first half of 1996.

ary through April, average daily fires increased—note that in April the area was experiencing an average of 28 fires and 138 acres (56 ha) burned per day. Reduction in fire starts in May and June occurred in spite of increasing fire danger and growing risk of ignitions.

Although there is no way to separate the effects of the many different prevention efforts at work across the Southwest during the fire siege, it is clear that, in combination, they prevented ignitions, some of which would have become large, damaging fires. The Southwest Fire Prevention Team was only one of the fire prevention efforts underway—the observed reduction in fire starts cannot be attributed to the team alone.

The Arizona State Department of Lands (1996) estimated that the combined suppression and prevention efforts in their State saved at least \$4 million. “One of the most important things about prevention during fire severity is its cost effectiveness,” said Cliff Chetwin, Aviation and Fire Management, NPS, Southwest Cluster. “It saves us a lot more than it costs us.”

This interagency effort—in operation from May 21 when the first area coordinator arrived until July 19, 1996, when the last members of the team left—included 663 person days at a total cost of \$180,000. It was supported by the USDI’s National Park Service, Bureau of Land Management, Bureau of Indian Affairs, and U.S. Fish and Wildlife Service; New Mexico State

Forestry; Arizona State Department of Lands, Division of Forestry; and the USDA Forest Service.

Subsequent Efforts

During the winter of 1996-97, members of the Southwest Fire Prevention Team and an Alaskan task force met at NIFC in Boise to develop a field guide and training course outline for future fire prevention teams. Pat Durland, BLM; and Billy Terry, Forest Service; with the assistance of Harry “Punky” McClellan, a private consultant, organized and facilitated the meeting. Wildfire prevention teams were available to be mobilized nationwide during the summer of 1997.

For more information about the Southwest Fire Prevention Team, contact one of the three area coordinators: Jeannette Hartog, 801-625-5245; Karen Curtiss, 541-383-5450; or Judith Downing, 916-246-5222.

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TEAMING UP IN THE WILDLAND-URBAN INTERFACE



Merle Glenn

It took a drought, outside resource people, and severe fire conditions to capture the full attention of people living in the wildland-urban interface areas adjacent to the Lincoln National Forest in 1996. Although fire protection work had been ongoing in the communities over the years, it was not adequate to keep up with the interface sprawl of businesses and residences. The beginning of the fire season, a drought, and the resulting closure of 70 percent of the forest in 1996 drove home the message that local fire and emergency agencies and community residents had a big wildfire threat to deal with. "We must learn to be good neighbors with fire and work together to reduce threats and handle wildfire emergencies as a team. When we do prescribed burning and fuels reduction adjacent to private property, we must look past boundaries and get the whole job done," said Jose Martinez, forest supervisor for the Lincoln National Forest.

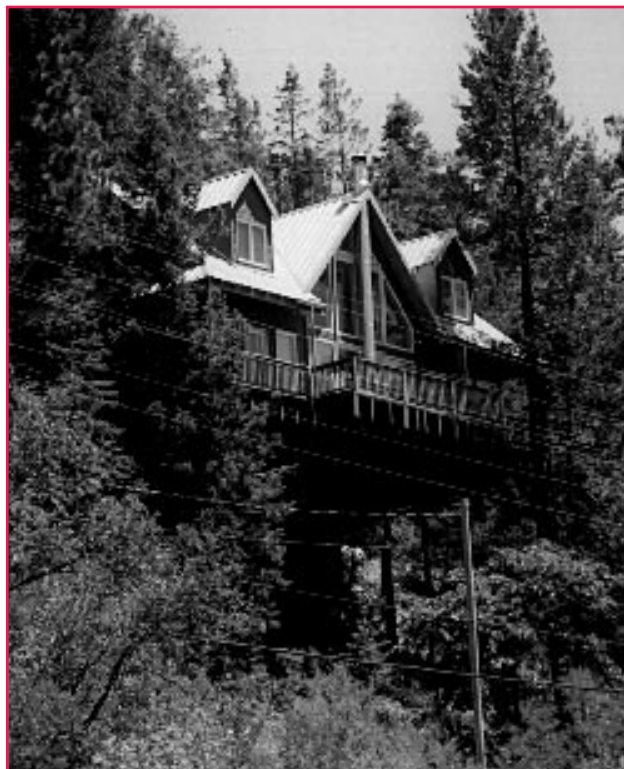
The fire season began in late February after a dry winter on the Lincoln, and no relief from hot, dry conditions was forecast. Fire conditions climbed steadily to extreme. In June and July, the Lincoln's Smokey Bear and Sacramento Ranger Districts received the help of two national teams. Assistance first came from the newly formed wildland-urban intermix

The FAST and CEEM Team became a catalyst of expanded customer service in the Lincoln's area of influence, literally "striking while the iron was hot."

"Functional Area Support Team" (FAST) headed by Gene Dowdy from the Fire and Aviation Management Staff, Washington Office USDA Forest Service. The team consists of four specialists—one in fire operations and others in community action, fire and fuels, and

community fire information and public affairs. The forest supervisor requested the help of the FAST to organize and inform those at risk on how to identify and manage the threat of wildfire to life, property, and natural resources. Normally, the FAST's function is to support an Incident Management Team in the wildland-urban intermix, but they were able to work on this urgent prevention and protection project while between assignments.

The FAST brought immediate results when members coached wildland-urban intermix cooperators from the community and neighbors of the popular mountain resort community of Ruidoso, NM,



One of many examples of wildland-urban interface problems on the Lincoln National Forest, Alamogordo, NM. Photo: Bob Beckley, Lincoln National Forest, Alamogordo, NM, 1996. [Editor's note: Beckley was on special assignment from the Missoula Technology and Development Center, Missoula, MT, when he took this and other photographs for the Lincoln National Forest.]

Merle Glenn is a public affairs officer for the USDA Forest Service, Lincoln National Forest, Alamogordo, NM.

through a role-playing exercise. As community members participated in a mock fire-emergency situation, it became clear who was responsible for doing what and how. They could identify missing components such as communication, equipment, response, and public education. The team completed an evaluation of the current cooperative programs and helped devise an action plan for implementation and monitoring. Not long after the FAST's detail to the Lincoln, the Ruidoso community changed a stringent tree-cutting ordinance that had previously prevented residents from doing a good job of fire protection. In addition, the community established areas where slash and thinning debris could be dumped, stimulating fuel reduction around homes and businesses.

The other group that addressed the Lincoln's wildland-urban interface was a 13-member, interagency Continuing Education in Ecosystem Management (CEEM) Team that focused on the communities adjacent to the Sacramento Ranger District. Part of the team's ecosystem-based report to the forest was an assessment of "fire regimes,"



An area near the Smokey Bear Ranger District after a fuels management project. Photo: Bob Beckley, Lincoln National Forest, Alamogordo, NM, 1996.

"fire occurrence and urban interface," and "fires and fuels on national forest lands."

An excerpt from the CEEM group's recommended action to achieve the right balance of a desired condition (e.g., having defensible space around every building) reads, "Residential areas of Cloudcroft, Lost Lodge, and Piney Woods would assess and establish their own desired conditions and needs with leadership and support from the Village [of Cloudcroft], Forest Service, CAST group (a community strategic planning organization), fire chiefs, fire commissioners and other interested parties."

Bringing in people from outside the forest put a new perspective on everyday challenges. The two teams' assessments of fire threats and existing conditions were in unison. Their messages to the public on taking stewardship for fire protection were an echo from the past, but new faces, new voices, and new ideas energized what had become routine. While it was necessary for the forest's personnel to concentrate on work expanded by the severe fire conditions, the FAST members and CEEM Team were able to reach into the communities and deal one-on-one with the public. They became a catalyst of expanded customer service in the Lincoln's area of influence, literally "striking while the iron was hot."

According to Martinez, "The work done by these teams will have a long-lasting benefit to the Lincoln and its neighbors. We were fortunate to have this additional work force during the period of extreme fire conditions." He concluded emphatically, "The CEEM and FAST teams, along with initial attack resources from outside the forest, got us through the worst fire threat on record with no major fires in our interface areas." ■



An area of the Smokey Bear Ranger District before fuels management. Photo: Bob Beckley, Lincoln National Forest, Alamogordo, NM, 1996.

FEDERAL ASSISTANCE AVAILABLE TO RURAL AND LOCAL FIRE DEPARTMENTS



Laurie Perrett

Several Federal programs are available to aid rural and local fire departments that need financial and other assistance. These programs, often administered in partnership with State agencies, target qualified fire departments staffed entirely or mostly by volunteer firefighters.

Volunteer firefighters are often the first line of defense in coping with fires and emergencies in rural areas. Approximately 75 percent of the over 1 million fire service personnel in the United States are volunteers (Karter 1995), generous members of our society who risk personal safety for the public good. Most of the volunteers (93 percent) are in departments that protect fewer than 25,000 people, and more than half are

located in small rural departments that protect fewer than 2,500 people. They often find it difficult to obtain local funding for basic needs such as training and equipment. Even though the volunteers have regular jobs and can serve as firefighters on a part-time basis only, they (and their families and friends) regularly participate in such fund-raising events as bake sales and community breakfasts to help raise necessary revenue.

The following Federal programs provide assistance to rural and local fire service organizations. Each program has specific and distinct requirements, many of which are not covered here. Additional information can be obtained from the contacts listed.

Program: **Volunteer Fire Department Grants—Rural Community Fire Protection (RCFP) program.** State forestry officials administer the RCFP program which provides cost-share grants to volunteer fire departments. The purpose of the program is to train, equip, and help organize rural and local volunteer fire departments.

State foresters solicit cost-share grant proposals from fire departments that serve communities of 10,000 people or fewer, review the grant proposals, and consider statewide needs when determining awards. At least 50 percent of the funding for RCFP cost-share grant projects must come from non-Federal sources. The Forest Service provides the funding and oversight for the RCFP program.

Sponsors: The Forest Service and State Forestry Organizations

Contact: Your State forester.

Program: **Community Facilities Program.** This program provides direct and guaranteed loans to rural communities to develop essential community facilities in rural areas and towns of up to 50,000 in population. Normally, guaranteed loans will not exceed 80 percent of the project to be financed.

Loan funds may be used to construct, enlarge, or improve community facilities such as fire departments. With the funds, communities can acquire land needed to develop the facility, pay necessary professional fees, and purchase equipment such as fire engines.

Loans are available to municipalities, counties, special-purpose districts, non-profit corporations, and tribal governments. Applicants must have the legal authority to borrow and repay loans and to operate the facility effectively.

Sponsor: The USDA Rural Housing Service

Contact: Your local USDA Rural Development Office (formerly known as the Farmers Home Administration). If you cannot find a local contact, telephone the national office for the USDA Rural Housing Service Community Programs Division at 202-720-1490.

Laurie Perrett is the branch chief for Cooperative Fire Protection, USDA Forest Service, Fire and Aviation Management, Washington, DC.

Program: **Purchasing General Services Administration (GSA) equipment using Federal Standard Requisitioning and Issue Procedure (FEDSTRIP).** FEDSTRIP allows certain users (mostly Federal) to purchase equipment and supplies at reduced prices through GSA. When fire departments have cooperative fire agreements with State forestry organizations, it is advantageous to the State (and, ultimately, Federal cooperators) for partner fire departments to have access to inexpensive fire equipment sources. For this reason, fire departments may be sponsored by the State forester and the Forest Service to use FEDSTRIP purchasing authority.

Not all State foresters choose to participate in this program, particularly at the local level, because there is a chance of State and Forest Service liability in default payment situations. Some States only allow counties to have FEDSTRIP purchasing ability while other States use nonprofit organizations such as Fire Chief's Associations to make bulk FEDSTRIP purchases and pass the savings on to fire districts served by them.

Rural and local fire departments must apply for FEDSTRIP purchasing authority to the State forester, generally by letter. Fire departments must have a cooperative fire agreement with their State forester and agree to purchase only firefighting equipment from GSA. Once accepted, GSA will send pertinent information about ordering procedures and a current copy of the *GSA Wildfire Equipment and Supply Catalog*. The catalog offers a wide variety of fire equipment, with significant savings in comparison to open-market prices.

Sponsor: State forestry organizations, the Forest Service, and GSA

Contact: Your State forester and the nearest Forest Service regional or area office.

FEDERAL PROPERTY ACQUISITION

It is important to distinguish between "excess property" as in the Federal Excess Personal Property (FEPP) program and "surplus property" as in the Surplus Property Donation Program. The term "excess" refers to Federal property no longer needed by the owning Federal agency that is offered to other Federal agencies for acquisition. FEPP remains Federal property and is on loan to State and local users. "Surplus," on the other hand, is a category of Federal property that is no longer needed by any Federal agency (as determined by the General Services Administration). Since Federal surplus property is no longer needed, it is offered to State and local users for reutilization.

Some surplus property is donated to the user; other surplus materials are offered for outright sale. Defense Reutilization Marketing Offices (DRMO), generally located near large military installations, handle sales of surplus property, which is often sold for very reasonable prices.

Three ways to obtain unneeded military and other Federal equipment are through the loan of Federal Excess Personal Property (FEPP), the donation of surplus property, and the outright sale of surplus property. Fire departments should consider using all three methods to their best advantage, seeking ways that they can complement one another. For instance, heavy equipment acquired by loan from the FEPP program may benefit from mechanical parts acquired by surplus property donation or sale.

Program: **Federal Excess Personal Property (FEPP).** The FEPP program reutilizes excess Federal equipment obtained from military and other sources. The Forest Service loans this equipment by agreement to State foresters who can sub-loan it to local firefighting organizations. FEPP equipment can be used for rural and wildland firefighting only. Some items may be usable immediately, while other property may require reconditioning or reconfiguring. There is usually a waiting list for more desirable equipment such as firetrucks.

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Types of FEPP typically acquired by State forestry and local fire departments include trucks, protective gear, heavy equipment, aircraft, trailers, generators, and shop equipment. Local fire departments must have a cooperative agreement with the State forester to participate in the FEPP program, and that agreement describes use and maintenance requirements.

Sponsor: The Forest Service and State forestry organizations

Contact: State forestry personnel should contact their nearest Forest Service regional or area office; fire department personnel should contact their State forester.

Program: **Surplus Personal Property Donation Program.** This program enables certain non-Federal organizations such as fire departments and nonprofit public programs to obtain property the Federal Government no longer needs. Personal property includes all types of equipment and supplies such as machine tools, office

machines, furniture, appliances, medical supplies, hardware, clothing, vehicles, boats, airplanes, construction equipment and materials, electronic equipment, and communications equipment.

A small service charge is levied for handling, transportation, and administrative expenses in the Surplus Property Donation Program. Clear title is not granted until a specified period of time (normally 12 to 18 months) has elapsed and the donee has fulfilled the program requirements.

Each State has a State Agency for Surplus Property (SASP) that manages this program. Restrictions may vary because each State agency can set its own terms and conditions.

Sponsors: The GSA and the SASP

Contact: Your nearest SASP office.

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CHECK YOUR CHAIN SAW

Ariana M. Mikulski

Husqvarna Forest & Garden Company, in cooperation with the U.S. Consumer Product Safety Commission, is recalling approximately 277,000 chain saws. These saws are orange and have the Husqvarna name printed on both sides of the motor. They have black, gray, or orange plastic hand guards. Authorized Husqvarna dealers sold them from 1990 to 1995 at prices ranging from \$400 to \$600.

Ariana M. Mikulski was the associate editor, assistant editor, and intern for Fire Management Notes from April through August of 1997. She was a volunteer for the USDA Forest Service, North Central Forest Experiment Station, East Lansing, MI.

Heat from a recalled saw's muffler can melt the saw's front hand guard if the removable exhaust deflector is not attached properly. A damaged hand guard can put you at risk for an injury from the chain. Husqvarna has received a report of a death in Canada and a report of a serious hand injury after the base of a saw's hand guard melted.

Recalled saws include:

- Any model 42, 51, 55, 242, or 254 with a serial number that begins with 531 or lower.
- Any model 61 or 257 with a serial number that begins with 324 or lower.

Find the Husqvarna chain saw's model number on either the left side of the motor or the serial number plate on the left front of the motor.

If you own one of these chain saws, stop using it immediately. Return it to your nearest Husqvarna dealer for a free replacement muffler that has a welded deflector. Your dealer can also replace your hand guard if it shows signs of heat damage.

For more information about the recall, contact Husqvarna at 1-800-438-7297. ■

STRUCTURE IGNITION ASSESSMENT CAN HELP REDUCE FIRE DAMAGES IN THE W-UI*



Jack Cohen and Jim Saveland

The wildland-urban interface (W-UI) refers to residential areas surrounded by or adjacent to wildland areas. In recent years, significant W-UI residential fire losses have occurred nationwide in the United States that have focused attention on the principal W-UI problem—losses of life and property to fire.

W-UI fires with significant residential losses differ from typical residential fires in that W-UI situations usually include the following:

- Large numbers of simultaneously exposed structures,
- Rapid involvement of residential areas,
- Overwhelmed fire-protection capabilities, and
- Total loss of residence per structure ignited.

Wildland vegetation fuels initially contribute to rapid fire growth. Large areas of burning that result can simultaneously expose numerous structures to flames and, most importantly, can rain firebrands (burning embers) on homes over a wide area. Although advances in

To assess potential ignitions, SIAM uses an analytical approach and worst-case assumptions to establish relationships between the design of a structure and its exposure to fire.

firefighting technology and management have produced the most effective firefighting capabilities in history, these advances have not prevented large losses during recent W-UI fires. Severe W-UI fires can destroy whole neighborhoods in a few hours—much faster than the response time of the best firefighting services.

Whether a W-UI fire occurs in Oakland, CA, as in 1991; Spokane, WA (in 1991); Grayling, MI (in 1990);

or Palm Coast, FL (in 1985), it is similar to others nationwide. A recent example occurred in October 1993, when the Laguna Hills Fire in southern California destroyed—in 5 hours—nearly all the 366 homes lost during that fire. Because these fires swiftly overtake residential areas, many structures do not receive fire protection and suppression during severe W-UI fire situations. As a result, typical postfire statistics reveal that homes

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* This article, in part, was presented at the Food and Agriculture Organization of the United Nations/Economic Commission for Europe/International Labour Organization Seminar on Forest, Fire, and Global Change in Shushenskoye (Russian Federation) in August 1996.



As the authors of this article explain, the chance of homes surviving a W-UI fire such as the Strong's Canyon Fire on the Wasatch-Cache National Forest is significantly "improved when homeowners implement W-UI firewise recommendations." Photo: James E. Stone, USDA Forest Service, Intermountain Region, Ogden, UT, 1990.

either survive or are totally destroyed. Relatively few structures suffer partial damage.

The W-UI fire problem can be characterized as the exposure of a residence to flames and firebrands resulting in ignitions that produce widespread, extreme losses. If residential fire losses did not occur during wildland fires, the W-UI fire problem would not exist. Thus, the principal issue is residential structure survival.

History of the W-UI Problem

Since 1985, the public has become increasingly aware of the W-UI fire problem. During this same period, fire agencies have devoted increasing amounts of time and effort to prevention and suppression of W-UI fires. Since 1995, structure losses during wildfires occurred in such diverse locations as New York, Texas, New Mexico, and Colorado. However, the W-UI fire problem is not new.

Historically, large urban losses have accompanied wildland fires. For example, such losses occurred in Peshtigo, WI, in 1871, Wallace, ID, in 1910, Berkeley, CA, in 1923, and the State of Maine in 1947 (Martin and Sapsis 1995). Over the last four decades, frequent wildland fires in California have resulted in significant residential losses. After major losses, government agencies generated reports that identified the W-UI fire problem and provided mitigation guidance (e.g., California Department of Conservation 1972; California Department of Forestry 1980; County Supervisors Association of California 1965; Howard et al. 1973; Radtke 1983). These comprehensive reports provided recommendations, including technical

specifications for W-UI urban planning, fire suppression, vegetation management, and building construction. However, recent events indicate that W-UI fires remain a problem in California and elsewhere, which suggests a lack of societal acceptance for W-UI firewise guidance.

People often use terms such as “miracle” or “luck” to describe how some homes survive amid the destruction of their neighbors’ residences. These words imply helplessness, a lack of control, and a detachment from responsibility. While these phrases may accurately describe the emotional states of those who just experienced wildfires, the assumption that homeowners cannot decrease fire losses is incorrect. Chance or “luck” does play a part in home survival, but the chances for home survival can be significantly improved when homeowners implement W-UI firewise recommendations.

During workshops in 1986 and 1987 (Laughlin and Page 1987; Gale and Cortner 1987), scientists and managers began to understand that societal attitudes were a critical part of the problem. Participants recognized that homeowners in W-UI areas were not readily implementing the available W-UI firewise recommendations. During the “Wildfire Strikes Home!” conference, the research subgroup concluded that homeowner acceptance depended on their increased understanding of W-UI fire hazards and aesthetically acceptable firewise measures (Laughlin and Page 1987). The conference made the following research recommendations:

- Manage W-UI hazards in an aesthetically acceptable manner,

- Understand the relationship of building design and clearance to fire hazards,
- Learn more about ignitions from burning embers (firebrands) that have been convectively transported, and
- Develop techniques to evaluate and identify fire risk.

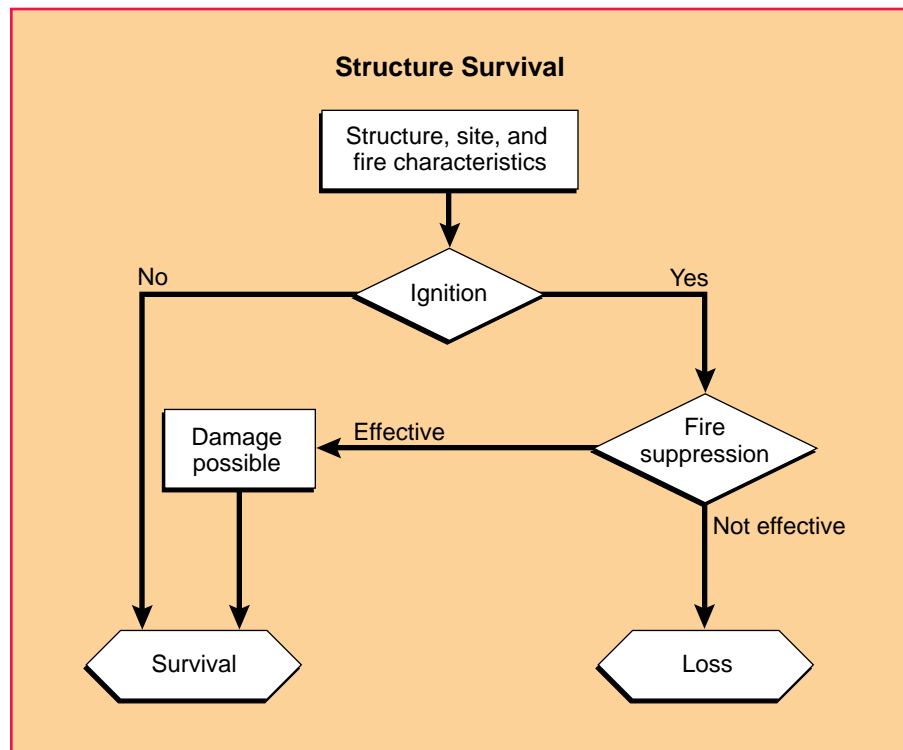
These recommendations reflected the conference participants’ realization that fire-protection agencies could not cope with the W-UI fire problem without firewise home and landscape designs.

Ignition Assessment for Improving Structure Survival

What we observe after a W-UI fire is, in varying degrees, structure survival. The degree of survival results from a complex, interactive sequence of events involving the ignition and burning of vegetation and structures, accompanied by varying fire-protection efforts by homeowners and firefighters. The development of an assessment method requires an explicit description (at some resolution) of the processes involved.

Structure survival involves factors that influence fire ignition; and, if an ignition occurs, the survival of a structure involves factors that influence fire suppression. Thus, structure survival assessments require comprehensive consideration of structure ignitability and suppression effectiveness. The factors influencing suppression effectiveness (availability, capability, and access of organized suppression forces and homeowners) greatly depend on the real-time situation. The unpredictability of the real-time situation makes descriptions of suppression effectiveness unreliable (Cohen 1991). Figure 1 dia-

Figure 1—Structure survival depends on factors that influence ignition and effective fire suppression. Regardless of the fire suppression effectiveness, survival *initially* depends on ignition resistance.



grams the general process leading to structure survival or loss. As the figure illustrates, the structure survival process must “pass through” the occurrence or nonoccurrence of an ignition. The dichotomous nature (survival or loss) of statistics about structure loss strongly suggests that expected fire suppression effectiveness is very low. Thus, improving structure survival depends on improving ignition resistance, at least initially. Improved structure ignition resistance leads to improved suppression effectiveness by homeowners and fire agencies.

Structure Ignition Assessment Research

USDA Forest Service Fire Research recognizes the need for a greater understanding of the W-UI fire problem in general and for a risk assessment process that incorporates the previously listed W-UI re-

search needs in particular. The Fire Behavior Unit at the Intermountain Fire Sciences Laboratory in Missoula, MT, is developing the Structure Ignition Assessment Model (SIAM) to facilitate W-UI firewise considerations. The SIAM design accounts for interactions between home design and materials and fire hazards such as vegetation and neighboring structures. Using SIAM, homeowners can achieve a firewise condition by making tradeoffs according to their specific desires, and thus, incorporate aesthetic interests.

SIAM assesses the potential for structure ignitions from wildfires burning in vegetation and other structures. SIAM is based on the premise that structure survival is the essence of the W-UI fire problem, but structure ignition is the critical element for survival. Thus, the model specifically addresses

the potential for structure ignitions rather than the potential for structure survival.

SIAM is designed to improve fire safety and identify potential W-UI fire problems. In its basic form, the model has a range of applications, from providing assessments of existing single homes to assessing housing developments in the planning stages. The basic model can provide the following:

- A means for local regulators to establish firewise requirements based on potential ignition risk for a mix of factors;
- A means for integrating a resident’s exterior home design and landscaping interests with firewise requirements;
- A means for integrating a developer’s home and neighborhood design interests with firewise requirements; and
- A means for fire agencies to assess W-UI fire risks for pre-suppression and suppression planning.

To achieve these applications, SIAM uses an analytical approach to establish relationships between structure design and fire exposure that results in the assessment of potential ignitions. Because actual fire conditions of a future fire are unknown, SIAM uses worst-case assumptions. For example, how and in what sequence the vegetation and other flammable materials adjacent to a structure will burn is unpredictable. Therefore, SIAM assumes all flammables will burn at the same time. The model also assumes that no fire protection will occur, a worst-case condition suggested by the nature of W-UI fire losses. Where ignition processes are not explicitly under-

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stood, e.g., firebrand exposure and ignition, the model's developers have based descriptions on experience and an understanding of the physical processes involved.

The SIAM research has produced preliminary results that refine our understanding of how flame exposure and window breakage influence structure ignition. Experiments have shown that windows are an important W-UI fire consideration (Cohen and Wilson 1995). Single-pane, plate-glass windows can thermally fracture and fall out at fire exposures insufficient to ignite exterior wood materials. A window opening provides an entry point for firebrands, greatly increasing the chances for ignition. Double-pane, plate-glass windows also fracture and fall out, but they can be exposed to heat for longer periods before potential window collapse. Importantly, experiments showed that tempered glass has a much higher resistance to heat fracturing than plate-glass window glazing.

Additionally, experiments and model results indicate that flames are an ignition threat only at close distances to a structure (actual distances depend on the flame and structure characteristics) (Cohen 1995). This finding suggests that nearby landscape vegetation and neighboring structures are important factors in structure ignitions. However, structures commonly ignite when fires are at distances too great for flame-heated ignitions, suggesting that firebrands are an extremely important source of ignition on and adjacent to a structure. Vegetation management beyond the structure's immediate vicinity has little effect on structure ignitions. That is, vegetation management adjacent to the struc-

BACKGROUND OF THE WILDLAND-URBAN (W-UI) INTERFACE AND SIAM

The term "wildland-urban interface" (W-UI), or "wildland-urban intermix," refers to residential areas in locations subject to wildland fire. Although the W-UI fire problem has received increased attention since the mid-1980's, the problem is not new.

The W-UI fire problem can be characterized as the exposure of a residence to flames and firebrands resulting in ignitions that produce widespread, extreme losses. What we observe after a W-UI fire is, in varying degrees, structure survival.

Assessments of the survival of structures require comprehensive consideration of structure

ignitability and suppression effectiveness. Improving structure survival initially depends on improving ignition resistance. USDA Forest Service fire researchers are developing the Structure Ignition Assessment Model (SIAM) to assess residential ignition resistance.

Current fire inventory systems do not adequately address the W-UI problem. Future systems should include W-UI residential ignition resistance, demographics, and residential loss in addition to suppression effectiveness. These concepts and methods form a technical basis for a strategy of assisted and managed community self-sufficiency.

ture would prevent ignitions from flame exposure; but vegetation management away from the structure would not affect ignition from flame exposure and would not significantly reduce ignitions from firebrands. For example, a flame front 60 feet (18 m) high at a distance of 150 feet (46 m) requires more time to ignite wood siding from radiation than the vegetative fuel's burning time. However, 150 feet (46 m) represents a very short distance for firebrands.

Fire Inventory Implications

Since their inception, wildland fire inventory systems in the United States have focused on improving wildland fire suppression effectiveness. In 1914, Coert duBois' "Systematic Fire Protection in the California Forests" established the individual fire report as the funda-

mental unit of information and demonstrated how using that information could improve fire programs. Since then, fire inventory systems have been used to assess and thereby improve wildland fire suppression effectiveness. The primary elements of the wildland fire inventory systems have been wildland acres burned, number and type of suppression resources assigned, and the time involved in traveling to and extinguishing the fire. With this focus on wildlands and suppression effectiveness in those wildlands, it comes as no surprise that there is no readily available public data base in the United States that adequately describes the W-UI problem or can be used to analyze and improve fire programs in the wildland-urban interface.

The minimum characteristics of a fire inventory system that would address the W-UI are feedback, risk, and responsibility. The inventory system should provide feedback on structure ignitability as well as suppression effectiveness. To address risk, defined as the chance of loss, a fire inventory system must provide information on the magnitude of loss, the likelihood of loss, and the recipient of loss. The dollar amount of insured loss is one way to assess the magnitude. The ability to link to demographic data bases will provide information on who is exposed to loss.

A good inventory system can foster homeowner responsibility by helping refute the faulty assumption that homeowners cannot decrease fire losses. At a minimum, a fire inventory system in the United States should consider collecting and archiving the following information on each structure within the perimeter of major W-UI fires:

- The tax-assessed value of the structure,
- The value of the structure's insured loss,
- The structure's ignition resistance, and
- Suppression effectiveness.

Conclusion

Past reports and recommendations as well as experimental research and modeling suggest that W-UI fire-loss mitigation should concentrate on the residence and its immediate surroundings. Any strategy for effectively reducing the W-UI fire problem must initially focus on residential fire resistance.

SIAM is designed to assess ignition resistance and thereby facilitate firewise building and landscaping practices. Fire inventory systems should also include W-UI information.

These concepts and methods form a technical basis for a **strategy of assisted and managed community self-sufficiency**. Instead of all fire-protection responsibilities residing with fire agencies, homeowners take responsibility for assuring firewise conditions and the initial fire defense of their residences during wildland fires. The fire agencies become a community partner that provides information, coordinates and assists in meeting firewise requirements, and provides fire suppression assistance.

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1996 NATIONAL PRESCRIBED FIRE AWARDS PRESENTED TO EIGHT RECIPIENTS



David L. Bunnell

The national-level awards in prescribed fire management were established in 1995 by the USDA Forest Service's Chief's Office under the leadership of the director for Fire and Aviation Management. This award recognizes Forest Service individuals, groups, or units that have forwarded the science, art, and/or acceptance of the use of prescribed fire in supporting ecosystem health. The basis for these awards and inaugural winners were reported on pages 12 and 13 of *Fire Management Notes*, volume 56, number 4, in 1996.

This award is given annually and includes monetary recognition as well as a distinctive plaque. Individuals may receive up to \$1,000 and groups or units up to \$2,500. The plaque is a uniquely designed, laser-engraved, prescribed fire scene on oak with a distinctive silver drip-torch emblem.

The winners have been selected by a group of their peers, acting on nominations made through regional Fire and Aviation Management directors. The 1996 Awards have been presented to the following employees:

- **Group Award:** Stanislaus National Forest—Larry Caplinger, Gary Cones, Jerry McGowan, Tim Adamiak, and Sid Beckman,
- **Program Support Awards:** Louise Larson, Sierra National

For the second year, the Forest Service has recognized those in the agency who “have forwarded the science, art, and/or acceptance of the use of prescribed fire in supporting ecosystem health.”

- Forest, and Ken Snell, Pacific Northwest Regional Office, and
- **Individual Accomplishment Award:** Allen Farnsworth, Jr., Coconino National Forest.

Stanislaus National Forest—Group Award

The Stanislaus National Forest has been instrumental in providing the leadership necessary to develop

and implement a complex prescribed burning program that has received both regional and national attention. The accomplishments of this program have been focused on both ecosystem restoration and maintenance applications. This program successfully dealt with myriad complexities, including interagency cooperation, smoke effects in a highly populated setting, landscape-level analysis and planning, project implementations, and successful education efforts regarding critical fire roles in ecosystems. It must be noted that while this group award identifies five individuals who provided leadership for this extensive program, the entire Stanislaus National Forest is to be commended for this integrated effort. All should share in the prestige this recognition brings these individuals and their forest.



The Stanislaus National Forest team that won the 1996 National Prescribed Fire Group Award (from left): Gary Cones, Larry Caplinger, Tim Adamiak, Jerry McGowan, and Sid Beckman. Photo: Susan Husari, USDA Forest Service, Pacific Southwest Region, San Francisco, CA, 1997.

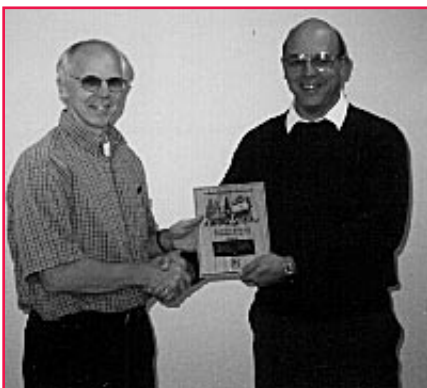
Dave Bunnell is the national fuel management specialist, USDA Forest Service, National Interagency Fire Center, Boise, ID.



Louise Larson with her 1996 National Prescribed Fire Award for excellence in advancing ecosystem management. Photo: Sue Exline, USDA Forest Service, Sierra National Forest, Clovis, CA, 1997.

Sierra National Forest—Program Support Award

Louise Larson was selected for a program support award for her long-term and highly successful promotion of technical applications and professional considerations in fuel management. Largely due to Larson's influence, the California Fuels Committee was established. Her work as an editor and publisher has had national application in promoting the concepts of fuel treatment with ecosystem needs. The establishment and function of this group



Ken Snell (left) receives his 1996 Prescribed Fire Award from Gordon Schmidt, deputy director of Fire and Aviation Management in the Pacific Northwest Region. Photo: Robert Devlin, USDA Forest Service, Pacific Northwest Region, Portland, OR, 1997.

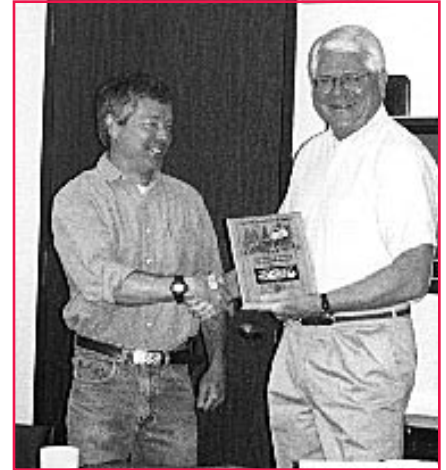
has provided a consistent forum for debate as well as development of fuel management concepts within the Pacific Southwest Region and has been advanced as a model of effectiveness within many land management agencies.

Pacific Northwest Region—Program Support Award

Ken Snell was selected for an award for his excellence in supporting the prescribed fire program through increased acceptance and understanding of smoke production. Snell has worked tirelessly and effectively in representing this important program element with local, State, and Federal regulatory agencies. The results of his work have produced quantifiable products that have described differences between prescribed fire smoke and smoke produced from wildfires and generated realistic prediction models that assist in projecting the effects of smoke production. Through his efforts to quantify the effects of smoke production, we have increased both public awareness and the regulating agency's understanding of the needs of the prescribed fire program.

Individual Accomplishment Award

Allen Farnsworth, Jr., has long been a leader in prescribed fire planning and implementation. His accomplishments are numerous and constitute a complex program that is becoming a model for many across the country. A highlight within this program is his leadership in implementing a multiagency prescribed burning program in rural-urban interface areas surrounding Flagstaff, AZ. This program may be unprec-



Allen Farnsworth, Jr. (left), receives his National Prescribed Fire Award for individual accomplishment from Fred Trevey, forest supervisor for the Coconino National Forest. Photo: Raquel Poturalski, USDA Forest Service, Coconino National Forest, Peaks Ranger District, Flagstaff, AZ, 1997.

edented regarding cooperative agreements with municipal and rural fire departments as well as the mitigation of effects of smoke in a metropolitan community.

Other notable aspects of Farnsworth's operational accomplishments are prescribed burning adjacent to high-value resources and private property as well as landscape-scale applications with complex endangered species and national-level political considerations.

Future Prescribed Fire Program Awards

Nominations for this annual Forest Service award are due to the Washington Office, Fire and Aviation Management Staff, by September 30 each year. Those wishing to nominate individuals or groups that deserve recognition for their work in fostering the use and understanding of prescribed fire can receive details from their regional director or contact Dave Bunnell, National Interagency Fire Center, Boise, ID, tel. 208-387-5218. ■

FIFTEEN SMOKEY BEAR STATUETTES AWARDED FOR 1996



Ariana M. Mikulski

The Cooperative Forest Fire Prevention (CFFP) Program recognized outstanding efforts in wildfire prevention by awarding one golden, six silver, and eight bronze Smokey Bear statuettes for 1996. The top award was presented at the USDA Forest Service's National Forest Fire Management Officers Conference in Albuquerque, NM, on May 1, 1997. Other awards were presented at various ceremonies throughout the country. The prevention awards are presented on behalf of the Forest Service, the National Association of State Foresters, and The Advertising Council.

The Golden Smokey Award

Golden Smokey Awards are the highest forest fire prevention awards. They honor a sustained commitment to wildfire prevention on a national level for at least 2 years. The sole recipient of the 1996 Golden Smokey was the Friends of Smokey Bear Balloon, Inc. (FOSBB). Associate Deputy Chief William McCleese presented the statuette to Jane Westenberger, chairman of the board of FOSBB, and Bill Chapel, the balloon's chief pilot.

Although FOSBB did not become incorporated in New Mexico until

Highlight: "The Cooperative Forest Fire Prevention (CFFP) Program recognized outstanding efforts in wildfire prevention for 1996 by awarding one golden, six silver, and eight bronze Smokey Bear statuettes."

1991, the concept behind the non-profit organization has a much longer history. Bill Chapel, an avid balloonist from New Mexico and one-time Forest Service employee, thought that a Smokey Bear hot air balloon was a great idea as early as the mid-1970's. He shared this idea with others everywhere he went and found support for it in the late 1980's. In 1990, John Pruitt, Roger Deaver, and Dick Pederson joined Chapel on a team that would turn the Smokey Bear balloon into a reality. FOSBB's balloon has some larger-than-life vital statistics: their Smokey weighs

over 1,100 pounds (500 kg) and has a 10-foot-(3-m-) long nose and a hat brim that measures 70 feet (21 m) in diameter.

FOSBB's hot air balloon is the primary component of their "Smokey Bear on Tour" program that also includes a natural resource conservation trailer. Traveling the U.S. and abroad since 1993, the tour targets large audiences, particularly urban children and their families. An estimated 9 million people have heard Smokey's message because of the FOSBB program.



FOSBB's balloon gets ready to carry out the organization's motto: "Going to Greater Heights to Prevent Wildfires." Photo: Bill Randall, Friends of Smokey Bear Balloon, Albuquerque, NM.

Ariana M. Mikulski was the associate editor, assistant editor, and intern for Fire Management Notes from April through August of 1997. She was a volunteer for the USDA Forest Service, North Central Forest Experiment Station, East Lansing, MI.

FOSBB also produces children's videos on fire prevention and resource management education. In the future, the organization plans to publish fire prevention booklets and activity sheets for the same audience.

The Silver Smokey Awards

Silver Smokey Awards are given to those who have made regional or multistate contributions to forest fire prevention for a minimum of 2 years. Recipients of Silver Smokey Bear statuettes for 1996 include John Blayney, Knott's Berry Farm, Mike Long, the Minnesota Incident Command System (MNICS) Fire Prevention Committee, Pat Mullaney, and Jim Sorenson.

John Blayney is a forester-ranger with the Wisconsin Department of Natural Resources (DNR). He has organized a yearly effort to distribute grocery bags throughout Wisconsin and Michigan's Upper Peninsula that carry the Great Lakes Forest Fire Compact's "Spring Fire Prevention Week" message. He has spoken to forest fire personnel in his region to encourage expansion of the grocery bag program. From 1980 to 1995, Blayney also organized high schoolers into fire crews; many of these crew members are now State and national firefighters.

Knott's Berry Farm has been a partner with the Forest Service in promoting fire prevention since 1993. One of the many activities that has been integrated into this entertainment park's program is a daily stage presentation called "Smokey's Animal Friends," which also visits southern California classrooms. The park's Wilderness Nature Center has "hands-on"

activities related to conservation education. Knott's Berry Farm also has a Junior Ranger Program, where participants learn about wildfire prevention methods such as planned, low-level fires.

Mike Long, an assistant State forester, worked with other State fire chiefs in fire prevention in the position of State fire chief for Florida from 1979 to 1996. Established in 1991, his fire prevention committee of the Southern Group of State Fire Chiefs has an annual meeting where individuals share their best fire prevention products and ideas. The subsequent selection of some of these products to be distributed throughout the region has helped reduce the number of human-caused wildland fires in the Southeast by 50 percent.

The MNICS Fire Prevention Committee is a group of representatives from various State and Federal agencies in Minnesota who meet in order to unify fire prevention statewide. Among their many accomplishments are an award-winning public service announcement and a float that regularly travels to parades and festivals. In the future, the group will begin packaging some of its materials into learning kits for schools.

Pat Mullaney of the Montana Bureau of Land Management has been the interagency fire prevention lead for the Eastern Montana Zone since 1980. In this capacity, he initiated the first interagency fire prevention activities ever held in eastern Montana. Mullaney has also served on the Interagency Special Prevention Activities Committee since its founding in 1989 and helped develop the national *Department of the Interior Wild-fire Prevention Orientation Guide*.

Jim Sorenson, a Federal Excess Personal Property and Rural Community Fire Protection program manager in the Forest Service's Southern Region, has developed several programs that have contributed to the region's steady 7-year decline in human-caused fires. He has directed several fire prevention idea contests and helped establish an annual regional fire prevention award program. Sorenson also worked on "50 Years with Smokey Bear," an award-winning video celebrating the golden anniversary of the Smokey Bear program.

The Bronze Smokey Awards

Bronze Smokey statuettes are awarded to those who have made an outstanding effort in local or statewide forest fire prevention for 2 years or more. The 1996 Bronze Smokey Award winners are Kenneth W. Cabe, Cynthia L. Frenzel, George Geer, James E. Grant, Jr., John Jackson, Tara Johannsen, Kurt Pagel, and Philip T. Stromberg.

Kenneth W. Cabe, a fire prevention-information officer with the South Carolina Forestry Commission, managed a fire prevention campaign in his State following the destruction caused by Hurricane Hugo. This campaign is believed to be the most intensive on record; after the initial 9 months and 9 counties, it grew to encompass 26 counties—over half of South Carolina—and lasted for 5 years. He has also conducted research about and created a profile of firefighter arsonists; the South Carolina Fire Service has subsequently used his research to curtail arson in the State.

Continued on page 28

A wildland-urban interface coordinator with the Virginia Department of Forestry, Cynthia L. Frenzel was awarded the bronze trophy for raising awareness of potential fire dangers in her State since 1991. She has done so by developing materials such as a firewise landscaping plant list; presenting talks, exhibits, and seminars; and writing a variety of fire prevention awareness materials.

George Geer, a fire prevention specialist for the Angeles National Forest, was recognized for his efforts in developing an interagency wildland fire prevention program at the California State Special Olympics. During the past 10 years, through a variety of interactive activities, he has spread Smokey Bear's message to countless Special Olympians at events throughout the State and throughout the year. He also is regularly contacted by other States to help them develop a similar fire prevention program.

James E. Grant, Jr., a public affairs manager for the Arkansas Forestry Commission, has been involved with fire prevention in many ways for the past 20 years. A plan to make fire prevention education more effective and the production of a video entitled "Wildfire—the Silent Danger" are among his various accomplishments.

John Jackson, forest area supervisor with the Florida Division of Forestry, has worked on fire prevention education on several levels by designing materials for school-age children and teaching firefighters about the Smokey Bear program. In 1993, he received a Clyde Award for his regional fire prevention efforts.

Oregon fire education specialist Tara Johannsen was honored for her involvement in the Central Oregon Fire Prevention Cooperative and the Mid-Columbia Fire Prevention Cooperative. She plays an instrumental role in the planning, organizing, and execution of the annual Pacific Northwest Interagency Fire Cooperatives Workshop.

Kurt Pagel, a retired Wisconsin DNR district forestry staff specialist, continues to be known as his State's "Mr. Fire Prevention." He has presented numerous fire prevention programs to school groups and written news releases and articles about wildland fire prevention and seasonal wildfire concerns.

A winner of the 1996 Northeast Forest Fire Supervisors' Eugene McNamara award, the highest fire prevention award in the Northeast, Philip T. Stromberg, a Wisconsin forest ranger, has been active in the legal aspects of fire prevention. His accomplishments include the reduction of illegal sales of fireworks and an excellent record of solving arson cases.

Recipients of citations include:

- Russ Van Arsdale, news director of WOCB-FM radio in Brewer, ME;
- The *Bangor Daily News* of Bangor, ME;
- Jim Barna Log Homes of Oneida, TN;
- Emma Cerami, a fire prevention specialist with the Mississippi Forestry Commission in Jackson, MS;
- Tom Ninnemann, a teacher in the Teton County Schools, Jackson, WY;
- The National Broadcasting Corporation and Microsoft National Broadcasting Corporation of Burbank, CA;
- Wanda Rogers, an office assistant

in the West Virginia Division of Forestry, Romney, WV;

- Maure Sand, a fire management coordinator with the North Dakota Forest Service, Bismarck, ND; and
- Paul Sebasovich, a forest program specialist with the Pennsylvania Division of Forestry in Harrisburg, PA.

A plaque was presented to Judith Downing, a fire prevention officer for the Forest Service's Shasta-Trinity National Forest in Redding, CA, for her work with the Southwest Area Wildfire Prevention Team.

The Nomination Process

Anyone wishing to nominate an individual for a Smokey Bear Award needs to complete a nomination form and attach supporting materials such as news clippings and photos. Nominees must have demonstrated success in the geographical area for which they are being nominated. In addition, an individual's minimum commitment to fire prevention of 2 years should be reflected in completed activities (activities in the planning and development stages do not qualify) and show service beyond the normal scope of his or her job.

Specific deadlines vary, but all nominations should be submitted to Forest Service regional coordinators at the beginning of October (to find out who your regional coordinator is, refer to a current *Fire Prevention Catalog*). The regional coordinators will then review the nominations and forward the ones that meet the selection criteria to the awards coordinator around mid-October. For more information, contact Nancy Porter at 916-364-2855. ■

NFF ASSISTS FIREFIGHTERS, THEIR FAMILIES, AND THE LANDS THEY PROTECT

Sherry Greenwood

Each year, thousands of men and women serve as vigilant protectors of our forests. They range from firefighters who serve on the initial attack crews and respond when a fire first ignites to those who serve on the incident overhead teams that work endlessly to contain fires. On August 28, 1996, at the peak of wildfire activity, 630 firefighting crews—nearly 22,000 dedicated men and women—were on front lines battling 52 major wildfires scattered across more than 490,000 acres (198,000 ha).

Two years earlier, the tragic wildfires of 1994 resulted in the deaths of 26 firefighters and injuries to many more. Unfortunately, as is too often the case when natural disaster strikes, firefighters are seriously injured or killed in the line of duty.

These devastating wildfires take their toll—both on our forests and on the firefighters who serve to protect them. The National Forest Foundation (NFF), a nonprofit organization established by Congress in the early 1990's to raise private funds to support the USDA Forest Service and its programs, has responded to these tragedies. By establishing a Firefighter Fund, Firefighters' Scholarship, and Forest Restoration Fund, NFF has

Sherry Greenwood is the development associate for the National Forest Foundation, Washington, DC.



The Firefighter Fund is a way for the National Forest Foundation to show America's firefighters how much their efforts are respected and appreciated. Photo: Yuen-Gi Yee, USDA Forest Service, Public Affairs Office, Washington, DC.

By establishing a Firefighter Fund, Firefighters' Scholarship, and Forest Restoration Fund, the NFF has demonstrated its commitment to our Nation's firefighters.

demonstrated its commitment to our Nation's firefighters—the vital link to the preservation of many of our lands—their families, and the lands they protect.

Firefighter Fund Established

In response to the fatal firefighting season of 1994, the worst since the

Mann Gulch fire of 1949, the NFF established a fund in the fall of that year. The fund supported the firefighters and their families who were tragically affected in 1994 and is available for those who are killed or injured during future fires.

The NFF established its Firefighter Fund with the donation of \$80,000 and the partnership of Northwest Contractors*, a firm that provides commissary services to firefighters at wildfire sites. The fund has grown with additional gifts from businesses and individuals who understand and appreciate the vital role and sacrifice made by the men

Continued on page 30

*The use of corporation or trade names is for the information of the reader and should not be misconstrued as an official endorsement by the U.S. Department of Agriculture or the Forest Service.

and women who are on the front lines dedicating their lives to combating wildfires.

According to Louis Ramsay, a prominent Arkansas attorney who is an NFF Board Member and the Chair of NFF's Firefighter Fund Committee, the fund is a way for the NFF to show these brave individuals how much it respects their efforts and what they do for this country. He said, "We hope this fund will help ease some of the burdens and stress that these courageous families face when such tragedies strike."

This fund is available to firefighters and their families who are severely disabled or killed fighting forest fires while employed by the Forest Service, the Department of the Interior, or State firefighting agencies. Each year, a committee of five members reviews the applications. Every selected applicant receives a grant of up to \$5,000 to provide basic financial, physical, and human needs such as food, clothing, housing, medicines, and education.

Since its inception, the Firefighter Fund has been a critical, rapid-response, humanitarian assistance program. To date, more than \$64,500 has been distributed to assist 20 families—in many cases, young families.

Tammy Smith, who lost her husband and the father of her unborn child while he battled a wildfire on the Gila National Forest in New Mexico, told the NFF, "The money from the NFF came in just as I needed it and I am grateful to [the Foundation] for its support."

Randy A. Dunbar, who lost his son—a college senior who fought

the 1994 fires—wrote, "Nothing will ever bring back our son, and his loss is still a large part of our every moment. His death and the entire tragedy have certainly exposed the basic human goodness that doesn't seem to show up so well in 'normal' times. We are humbled by your support, and the kindness of the donors who have made such help possible."

To continue to assist people like these, the fund must endure. The Firefighter Fund relies on the continued support of concerned citizens, businesses, and foundations.

Firefighters' Scholarship

In 1997, the NFF established a Firefighters' Scholarship to increase its support of these protectors of our lands. The Citicorp

Foundation awarded the NFF a \$100,000 grant (to be paid in \$20,000 installments over 5 years) to create a scholarship fund for the continued education of families of firefighters who have been killed or significantly disabled in the line of duty.

Paul Ostergard, Citicorp Foundation president, told the NFF, "Many times, families in such situations receive support to cover their immediate needs, but not future ones. Higher education is one of those future needs, and Citicorp is glad to make this grant as part of its educational program."

Each year, a committee will review the applications and award \$2,000 scholarships toward tuition to a college, university, or technical school. Applications are due in the



Devastating wildfires take their toll—both on our forests and on the firefighters who serve to protect them. Photo: USDA Forest Service, Public Affairs Office, Washington, DC.

ABOUT THE NATIONAL FOREST FOUNDATION (NFF)

The NFF provides funding to support the Nation's forests and the individuals who care for them. The foundation feels that firefighting is one of the most dangerous and brave ways of carrying out this responsibility.

The foundation, located in Washington, DC, is the only private, congressionally chartered, citizen-directed, 501 (c) (3) non-profit organization dedicated to the conservation of our national forests. Funds are raised from corporations, foundations, and individuals who, like us, are committed to helping care for our Nation's forests.

The NFF assists the Forest Service with caring for more than 191.6 million acres (77.5 million ha) of lands consisting of 156 national forests and 20 national grasslands. These lands receive more than 835 million visits an-

nually, compared to the National Park Service with less than 300 million. This use includes recreation on more than 121,000 miles (195,000 km) of trail, 135 ski resorts, and 4,400 campgrounds. These lands also provide habitat for 80 percent of the elk, mountain goat, and bighorn sheep in the contiguous 48 States, habitat for 50 percent of the Nation's other creatures, and 205,000 miles (330,000 km) of rivers and streams.

Thank You, Firefighters

The National Forest Foundation greatly appreciates our firefighters and hopes that these firefighting funds and forest restoration efforts will show them how much the NFF appreciates and believes in the work firefighters are doing to preserve and maintain these lands for our children's children.

NFF's office each year by May 1, and awards will be announced by June 30.

Forest Restoration Fund

In addition to providing support for the families of those who battle these fires, the NFF is uniquely positioned to respond to the devastation on the land. The foundation generates and distributes funds in response to Forest Service needs—needs that are critical in caring for the 191.6 million acres (77.5 million ha) of national forest lands. The destruction caused by wildfires affects the watersheds, the wildlife,

and the grandeur of our national forests and grasslands. In 1996 alone, wildfires damaged a total of 5.9 million acres (2.4 million ha) of forest and range land—more than 2 million acres (800,000 ha) on national forest lands and over twice the average number of acres burned annually.

The NFF recently implemented the Forest Restoration Fund to provide funding to restore the critically burned forests that protect our watersheds, provide habitat for thousands of species of wildlife and fish, and offer outstanding recreational opportunities.

This fund focuses on tree planting as the critical element in returning a forest to health after a wildfire. Healthy trees reduce the overall effects of water and wind erosion, provide a vital habitat for wildlife, and increase the oxygen content of the air and the aesthetic value of our national forests. In addition to planting trees, the NFF also will award grants for the following restoration activities:

- Seeding with native species of grass,
- Planting shrubs native to the area,
- Constructing log erosion barriers,
- Rehabilitating campgrounds,
- Rehabilitating picnic areas,
- Repairing roads and trails and cross-ditching,
- Stabilizing stream channels, and
- Repairing ancillary structures.

The NFF regularly approaches companies and foundations to assist them in their efforts to bring life back to the charred forests before rain and erosion turn our national forest lands into permanent wastelands.

Applications and Donation Information

Applications for either the Firefighter Fund or Firefighters' Scholarship may be obtained by contacting: The National Forest Foundation, 1099 14th Street, NW, Suite 5600W, Washington, DC 20005-3402, tel. 202-501-2473, fax 202-219-6585.

If you are interested in making a donation to the Firefighter Fund or the Forest Restoration Fund, call Sherry Greenwood at the NFF at 202-273-0373, or write directly to her at the above address. ■

FIRE INFORMATION FOR EVERYONE, ANY TIME



Nicole R. Higgason

When the Internet was developed in the 1960's as a tool for military and defense contractors, few, if any, users foresaw how it would develop over the next decades. In just the past 6 years, the World Wide Web, an application in the Internet, has expanded rapidly, partly due to the popularity of such web graphical browsers as Mosaic, Netscape, and Explorer that allow users easy access to sites all over the world. Establishing a presence on the web has become almost a mandatory part of doing business, especially for public agencies such as the USDA Forest Service.

For several years, homepages have been evolving throughout the Forest Service, with the Washington Office at <http://www.fs.fed.us/> having the largest. This homepage offers an array of topics such as "Global Forestry," "Forest Health," "Publications," "Forests & People," "Timber," "Research," "Fire," "Enjoying the Outdoors," "News & NEPA," and "Maps." Under the topic "Fire," *Fire Management Notes* (FMN) readers will find this journal's address: <http://www.fs.fed.us/land/fire/firenote.htm>. FMN has been online since the first issue of 97; generally, the journal appears online before it arrives in subscribers' mailboxes.

Nicole Higgason is a student at Michigan State University. As a volunteer for the USDA Forest Service, North Central Forest Experiment Station in East Lansing, MI, she was an intern and assistant editor for Fire Management Notes from January to May 1997.

"Establishing a presence on the Internet has become almost a mandatory part of doing business, especially for public agencies such as the USDA Forest Service."

mailboxes. FMN is published as a pdf file and may require the Adobe Acrobat Reader to view.

Users who click on "Publications" or "Research" on the Forest Service's homepage can also find fire research publications from a number of agency research stations. The Pacific Southwest (PSW) Region's homepage at <http://www.r5.pswfs.gov/> is one example of the excellent station and regional web sites available that use new technology to link partners and customers. Under the topics "Video Library" and "News Releases," the PSW has a variety of information and materials—often about fire—which are constantly updated.

Finding Specific Fire Information

There is no shortage of fire information available in various places on the web. For example, one browser found at least 1 million web sites when searching for the key words "forest fires" and "wild-land fire." Fire information can be

obtained not only from the Forest Service's homepage under "Fire" (<http://www.fs.fed.us/land/#fire>) but also directly from the addresses below. It is important to note that the web is in constant transition, therefore, addresses may differ from those included here.

- FEMA (Federal Emergency Management Agency) <http://www.fema.gov> Available at this site are topics such as "Reducing Risk Through Mitigation," "Working for a Fire Safe America," "Help After a Disaster," "Reference Library," and "FEMA News Room."
- Firenet <http://www.csu.edu.au/firenet/> Affiliated with Charles Sturt University in Australia, this site contains Australian fire weather information under "Online information processing and services" and a "Bibliography of Australian Fire Research" under "Publications."
- NAPI (National Arson Prevention Initiative) <http://166.112.200.140/napi/napi.htm> Started in 1996 by President Clinton, this site is led by FEMA. Its purpose is to raise public awareness about arson fire prevention throughout the Nation and includes a toll-free number.
- NFPA (National Fire Protection Association) <http://www.nfpa.org> This site contains current fire information and includes such topics as "NFPA Periodicals" and "NFPA Fire Safety Information."

- NICC (National Interagency Coordination Center) <http://www.nifc.gov/sitreprt.html> Linked to the NIFC homepage, this site contains descriptions of the current fire situation throughout the United States and summaries of such information as fires during a specific period, acres burned, and committed resources.
- NIFC (National Interagency Fire Center) <http://www.nifc.gov> Fire information is available at this site under the topics "Fire Weather Information," "Current Fire Information," and "Hot News." This site is linked to the USDI Bureau of Land Management homepage at (<http://www.blm.gov>).
- NOAA (National Oceanic and Atmospheric Administration) <http://www.noaa.gov> This site includes programs and services on topics such as "National Weather Service" and "NOAA Environmental Information Services for Information and Data."
- USDI Fish and Wildlife Service Fire Management <http://fwspceaa.nifc.r9.fws.gov/~olson/firemanagement.html> Information such as "Federal Wildland Fire Policy," "Fire Statistics," and prescribed burning guidelines are available at this site.
- USFA (U.S. Fire Administration) <http://www.usfa.fema.gov> The National Fire Academy (NFA) is an organizational unit of the USFA. "Through its courses and programs, NFA works to enhance the ability of the fire ser-

vice and allied professions to deal more effectively with fire and related emergencies." Fire information may be obtained from these topics: "About USFA," "Learning Resource Center," "Publications," "Firefighters Memorial," and "National Fire Programs."

- As part of the Wildland Fire Assessment System (WFAS), there are a number of addresses readers may wish to know. These give a good picture of the fire danger conditions from a national perspective. Some examples: Wildland Fire Assessment System maps (<http://www.fs.fed.us/land/wfas/welcome.html>) Haines Index (<http://www.fs.fed.us/land/wfas/haines.gif>) Keetch-Byram Drought Index (<http://www.fs.fed.us/land/wfas/kbdi.gif>) Observed Fire Danger (http://www.fs.fed.us/land/wfas/fd_class.gif)
- WRCC (Western Regional Climate Center) <http://www.wrcc.sage.dri.edu> The WRCC homepage has fire weather forecasts, current conditions, and situation reports under the topic "Climate, Weather, and Fire."

Other Related Sites

- Wildland-urban interface (<http://www.firewise.org>)
- WESTAR (Western States Air Resources) Council—Projects such as "Forest Health," "Particulate Matter," and "Wildland Fire Policy" (<http://westar.org/>)

For Children and Their Educators

Teachers and children can also learn more about fire as well as prevention from a number of web sites. Four of these are as follows:

- NISE (National Institute for Science Education) http://whyfiles.news.wisc.edu/018forest_fire/index.html This site examines the role of fire in natural systems and the role of science in understanding wildfires. Subjects explored on this web site include computer models of forest fires, methods for spotting forest fires, and why some ecologists like wildfires.
- NPS (USDI National Park Service) <http://www.nps.gov> A search under the keyword "fire" will access background information for teachers along with other documents such as "Fire in the National Parks" and "Wildland Fire Activity Summary."
- Project Learning Tree (PLT) has a good deal of information about the environment for teachers and children and includes educational material about fire. The address for PLT is <http://eelink.umich.edu/plt.html>.
- Smokey Bear has his own interactive homepage for children wanting to learn more about preventing unwanted wildland fires; it includes animation, puzzles, and games. The address is <http://www.smokeybear.com>.

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"FIRE'S ROLE IN NATURE" WINS TOP MEDIA AWARD

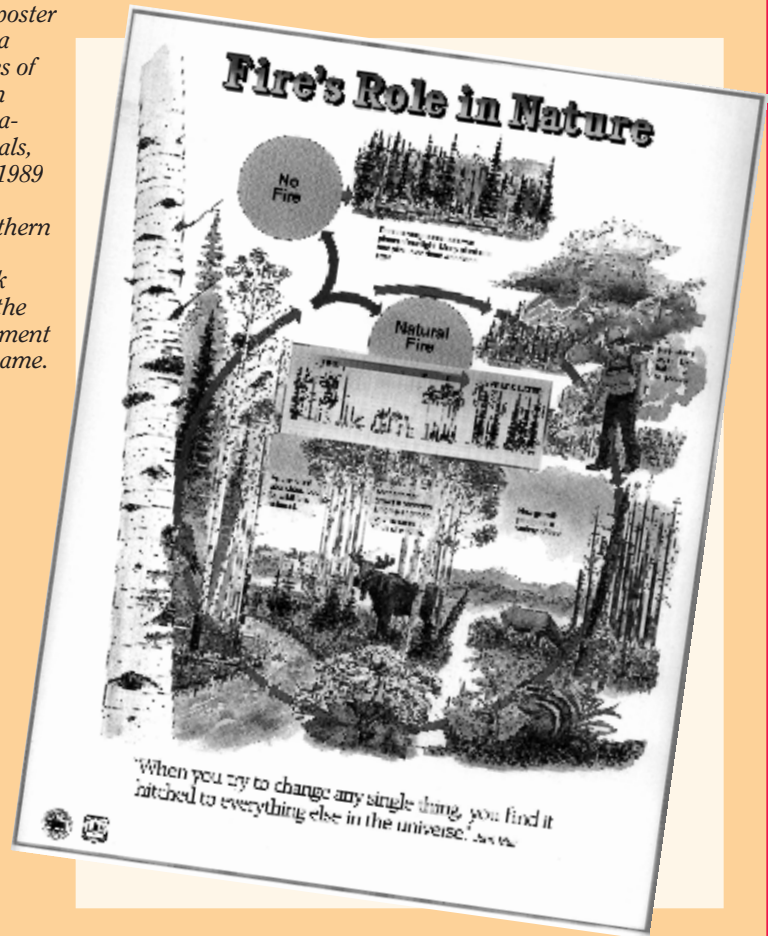
Donna M. Paananen

The National Association of Interpretation named the poster series "Fire's Role in Nature" the winner of its 1996 Interpretive Media Award—Poster Category. Dana Dierkes, a USDI National Park Service (NPS) interpreter, accepted the plaque at a ceremony at the association's annual workshop in Billings, MT, in October 1996. She also represented the USDI's Bureau of Land Management (BLM) at the occasion.

According to Patrick T. Durland, BLM fire management specialist at the National Interagency Fire Center in Boise, ID, "These educational posters and materials are some of the tools needed to help the fire community communicate the total message of wildland fire, its risks, and its rewards." He stressed that nationwide during this decade, there has been an increased interest in interpreting the positive effects of wildland fire.

After the 1988 Yellowstone fires, the NPS, the USDA Forest Service's Northern Region, and the Idaho Department of Fish and Game introduced the poster series to help educate the public both about what happens if no fires occur in wildlands and what results can be obtained from natural fire. Laird Robinson in the Northern Region Public Af-

The original poster that sparked a winning series of "Fire's Role in Nature" educational materials, published in 1989 by the Forest Service's Northern Region, the National Park Service, and the Idaho Department of Fish and Game.



fairs Office in Missoula, MT, coordinated the publication of the original poster shown here. The BLM became involved when the first reprint was made in 1993.

Other agencies with fire responsibilities recognized the value of the messages of "Fire's Role in Nature" and are including them in public education campaigns. In addition to the original poster shown here, there are materials that depict fire's role in the southeastern pineland ecosystems, and Durland reports that this year another poster was added to the series: "The Role of Fire in the Great Basin Sagebrush Steppe."

The National Association for Interpretation's annual award recognizes excellence in interpretative materials such as publications, exhibits, CD-ROM's, and homepages. The Association seeks to advance the profession of interpretation and to inspire leadership and excellence among those individuals who are part of the field. Its 2,600 members include historians, teachers, curators and Interior interpreters and park rangers.

For more information about the poster series, contact Pat Durland at the Bureau of Land Management, Office of Fire and Aviation, 3833 South Development Ave., Boise, ID 83705. ■

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GUIDELINES FOR CONTRIBUTORS

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